

News in Review

COMMENTARY AND PERSPECTIVE

PUBLIC HEALTH

New Shingles Vaccine Approved

ANYONE WHO HAS HAD SHINGLES knows how painful the condition can be, wherever it occurs on the body. And when the disease manifests as herpes zoster ophthalmicus (HZO), it causes a special, and potentially unending, misery.

But the recent approval of a second vaccine against herpes zoster is offering ophthalmologists a golden opportunity to help patients protect their eyes from HZO. It is recommended that the new vaccine (Shingrix, GlaxoSmithKline), as well as its predecessor (Zostavax, Merck), be given to immunocompetent patients as young as age 50—a decade sooner than earlier recommendations from federal health officials.

Urgent need for immunization.

Although the relative merits of the 2 vaccines can be debated, “The real problem is that people are just not getting immunized at all. The penetration is incredibly poor,” said cornea specialist Kathryn Colby, MD, PhD, at the University of Chicago. In 2015, only 30.4% of eligible people 60 years and older were vaccinated for zoster.¹

“Primary care providers don’t seem to understand the need to vaccinate against herpes zoster, so it’s good for ophthalmologists to educate patients on the benefit—because we’re the ones who will end up managing the complications. We need to get the word out, period,” said Dr. Colby.

Another cornea specialist, Francis W. Price Jr., MD, said he urges fellow ophthalmologists to advise their patients to protect their vision by getting vaccinated. “I tell my patients that getting shingles in your eye is one of the worst things that can happen to an eye,” said Dr. Price, of Price Vision Group in Indianapolis. “Chronic pain from shingles can occur from scarring around the nerve. It can literally go on for the rest of their lives.”

Recommendations. The FDA approved Shingrix last October with an indication for patients 50 years and older. Shortly afterward, the federal Advisory Committee on Immunization Practices (ACIP) voted to recommend the following:

- Shingrix should be used preferentially over Zostavax, because of clinical trial evidence that the new vaccine is more effective (a > 90% decrease in zoster incidence in all age groups, versus a 70% decrease with Zostavax in people 50-59 years old and 51% in people ≥ 60 years).
- All immunocompetent Americans age 50 and older should be immunized with the new vaccine.
- Patients should receive Shingrix even if previously immunized with Zostavax, as evidence shows that the latter’s effectiveness wanes within a few years.

Impact on the eye. Recognition of shingles’ potential to cause serious disease, pain, and complications in non-



PROTECTING VISION. Approximately 1 in 5 new shingles cases each year is HZO, which can lead to devastating sequelae, including chronic pain, corneal opacification, glaucoma, and retinal disease.

elderly patients has led several medical societies, including the Academy, to recommend that all adults be immunized against herpes zoster beginning at age 50.² Some 1.2 million new zoster cases occur each year in the United States; of these, about 20% are HZO.²

Complications. Complications of ocular shingles include anterior and posterior segment disease; neurotrophic ocular surface disease; eyelid malpositioning/scarring; and irreversible vision loss due to corneal opacification, glaucoma, and retinal disease.

Dr. Price said that, in his experience, shingles lesions anywhere on the face or head put the patient at risk for HZO. “The textbooks generally say that you get shingles in the eye when you have an outbreak on the tip of your nose. But I’ve been doing this for over 30 years, and I have seen HZO after lesions located anywhere on the face and head,” he said.

What about cost? The Shingrix vaccine requires 2 doses, at least 8 weeks apart, and initially patients may find that insurance coverage of the estimated \$280 total cost is spotty. “But I tell

patients that if you've ever known anybody who's had shingles, you'd go out and get vaccinated, whether insurance pays for it or not," Dr. Price said.

—Linda Roach

1 Williams WW et al. *MMWR Surveill Summ.* 2017;66(11):1-28.

2 aao.org/clinical-statement/recommendations-herpes-zoster-vaccine-patients-50-

Accessed Dec. 13, 2017.

Relevant financial disclosures—Drs. Colby and Price: None.

CATARACT

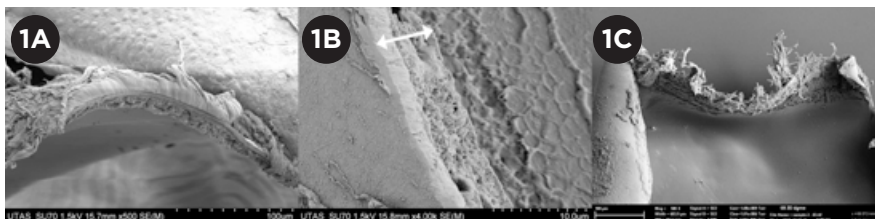
Thermal Device for Capsulotomies Hits Snag

THE POSSIBILITY OF A LOWER-COST alternative to the femtosecond laser for cutting precise, reproducible capsulotomies is attractive, but one such automated device has yielded mixed results, Australian researchers have reported.

The thermal capsulotomy device (Zepto, Mynosys) consists of a disposable handpiece with a circular ring at the tip, attached to a power console. The surgeon inserts the handpiece tip into the anterior chamber through a 2.2-mm incision and places the ring onto the anterior capsule, aligned with the visual axis. The power console then incises the capsule with a ring of 4-millisecond energy pulses.

Study results. In this prospective study, the Zepto successfully created capsulotomies (N = 13) that were central and circular, providing for good intraocular lens position.¹ This was similar to earlier reports by others who conducted preclinical studies and 1 small clinical study.²

Irregular margins. However, at the slit lamp, the researchers found that fraying was visible along the thermal capsulotomy margins. Viewed with scanning electron microscopy (SEM), all the capsular buttons had irregularities and frayed collagen fibers along their edges. In contrast, SEM of 2 capsular buttons that were removed after continuous curvilinear capsulorhexis (CCC) showed they had uniform



IRREGULARITIES. Scanning electron microscopy showed areas of irregularity, with different degrees of rolling angle and direction (1A, 1B) and frayed collagen fibers at the capsulotomy margins (1C).

margins, with no imperfections.

The propensity for irregular margins on thermal capsulotomies is concerning because this might lead to radial capsular tears, said study coauthor Brendan Vote, MBBS, at the University of Tasmania in Launceston, Australia. "There seemed to be an inherent delivery problem in the device, creating a focal 'hot spot' and weakened capsule in some cases," Dr. Vote said.

Clinical problems. In clinical use in about 125 cases, Dr. Vote said, he and other surgeons in Tasmania and Melbourne also have found that incomplete capsulotomy can be a problem. "We have used the device for about 6 months in total, but we have stopped using it as it was not reliable enough in capsulotomy creation." They also had concerns about potential anterior capsule tears, he said.

Looking ahead. Dr. Vote said he expects the manufacturer to modify the Zepto to address such issues, but an economic roadblock would remain, he said. "Ultimately the biggest barrier to device use, once a satisfactory technical threshold is reached, will be the cost. A per-case cost of \$30-\$50 would need to be achieved to make incorporating the device into practice cost-effective."

According to the manufacturer, a thermal capsulotomy system sells for about \$12,000 in the United States, compared to approximately \$500,000 for a femtosecond laser. But each single-use handpiece costs \$130 to \$165, depending on facility volume.

—Linda Roach

1 Hooshmand J et al. *Ophthalmology.* Published online Oct. 23, 2017.

2 Waltz K et al. *J Cataract Refract Surg.* 2017 May;43(5):606-614.

Relevant financial disclosures—Dr. Vote: None.

NEURO-OPHTHALMOLOGY

Botox Provides Relief for Dry Eye and Photophobia

PATIENTS GIVEN BOTULINUM TOXIN

A (Botox) for relief of their migraines might experience a secondary benefit: relief of their symptoms of photophobia and dry eye.¹

In a retrospective study of patients at the Miami Veteran Affairs Medical Center, researchers from the University of Miami Miller School of Medicine confirmed their hypothesis that migraine, photophobia, and dry eye share neural mechanisms. "We hypothesized that therapies influencing nerve function also influence sensations like dryness and light sensitivity," said Anat Galor, MD, MSPH, "especially the dry-eye subtype we think is more neuropathic."

Relief of symptoms. All 90 patients in the study had chronic migraine (\geq 15 per month) and had failed a trial of at least 2 migraine drugs or had contraindications to these medications.

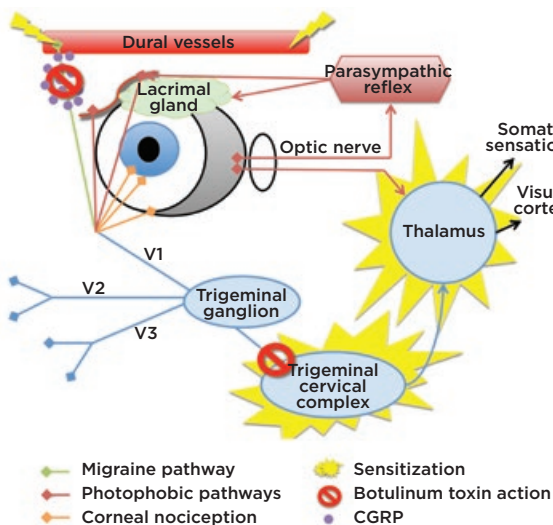
They were asked to recall their ocular symptoms before and after receiving Botox injections and to rate their symptom severity on a scale of 0 to 10. The investigators found that the intensity of all 3 sensations—migraine pain, photophobia, and dryness—was highly correlated, with 72.5% of patients reporting improvement in photophobia and 29.3% reporting improvement in dry eye symptoms. More than a third of patients with photophobia improvement rated it as "much better"; older patients reported more relief in eye pain symptoms.

Inflammatory action. The research-

ers believe that calcitonin gene-related peptide (CGRP) may be central to study results. “One of the proposed mechanisms in migraine is excessive CGRP release, which leads to neurogenic inflammation, recruitment of inflammatory cells to the site, and an inflammatory environment that does further damage to nerves,” Dr. Galor said. “You end up with afferent traffic in the trigeminal system that can then sensitize the system.”

Up to now, she said, sensations of dryness weren’t considered in the same category as migraine pain, “but sensations of dryness and photophobia are also transmitted via trigeminal activation, so sensitization may underlie the correlation among these symptoms.”

In the clinic. Ocular pain doesn’t always come from the ocular surface, Dr. Galor said. “We have to acknowledge that for a subset of dry-eye patients, the primary problem is nerve sensitization.” She added, “This proof-of-concept study suggests that strategies used to treat nerve pain may be effective when clinicians suspect that neuropathic mechanisms underlie dryness and photophobia.” —Rebecca Taylor



METHOD OF ACTION. Botulinum toxin A inhibits nociceptive nerve impulses and release of calcitonin gene-related peptide (CGRP) at the trigeminal cervical complex, reducing peripheral and central sensitization and indirectly leading to a reduction in migraine pain, photophobia, and dry eye sensations.

1 Diel RJ et al. *Ophthalmology*. 2018;125(1):139-140.

Relevant financial disclosures—Dr. Galor: Allergan: C; Shire: C.

RETINA

27-Gauge Vitrectomy Surgery: Is Smaller Better?

STUDIES WILL HAVE TO CONFIRM

whether the smallest of small-gauge vitrectomy instrumentation is better than earlier generations of fine-gauge instruments. For now, a study shows that the 27-gauge pars plana vitrectomy (PPV) system for posterior segment disease is at least as safe and effective as larger-gauge equivalents.¹

The retrospective interventional case series involved 360 patients (390 eyes) undergoing 27-gauge PPV (Constellation Vitrectomy 27+ Total Plus Pak, Alcon). “Surgical outcomes were comparable to the initial experience with 23- and 25-gauge instruments, and no new safety concerns were identified at follow-up of at least 1 year,” said M. Ali Khan, MD, at the Doheny and Stein Eye Institutes in Los Angeles.

Dr. Khan stressed the importance of a study like this for yielding “real-world outcomes.” Surgeons decided which of some 5,000 vitrectomy cases presenting during the study period would undergo 27-gauge PPV. The most common indication was epiretinal membrane (n = 121), followed by vitreous floaters (n = 69) and diabetic tractional retinal detachment (n = 49).

The findings. Across all indications, mean visual acuity improved from 20/105 to 20/50. Postoperative complication rates were low, the most common being transient ocular hypertension (n = 44). Other complications



IN ACTION. The 27-gauge device in use during repair of a tractional retinal detachment.

included vitreous hemorrhage, transient hypotony, and cystoid macular edema. Overall, 21% of eyes underwent at least 1 additional intraocular surgery during follow-up, most commonly for cataract extraction.

Questions remain. It’s still unknown whether a significant difference exists among outcomes using the various small-gauge instruments, but some cases might lend themselves to particular instrumentation, Dr. Khan said. “The 27-gauge system may be preferred in cases with extensive membrane dissection, such as diabetic tractional retinal detachment, during secondary intraocular lens placement, or in situations when biopsy is needed.” He added, “In cases when silicone oil is needed or the vitreous/media to be removed is dense, as in a chronic vitreous hemorrhage, a larger-gauge system may be preferred for the increase in flow rate.”

An Alcon-sponsored study comparing outcomes in cases randomized to 23-gauge or 27-gauge instrumentation, now in the data analysis phase, may provide more definitive answers.

In the meantime, said Dr. Khan, “I think each of the 27-, 25-, and 23-gauge systems can be used effectively for the surgical management of retinal disease.”

—Miriam Karmel

1 Khan MA et al. *Ophthalmology*. Published online Nov. 13, 2017.

Relevant financial disclosures—Dr. Khan: Allergan: C.

See the financial disclosure key, page 8. For full disclosures, including category descriptions, view this News in Review at aao.org/eyenet.